

Vulcan Materials Company July 2006 Groundwater Quarterly Monitoring Report

**Former Hewitt Landfill
Los Angeles, California**

September 2006

Prepared for:
Vulcan Materials Company
3200 San Fernando Road
Los Angeles, CA

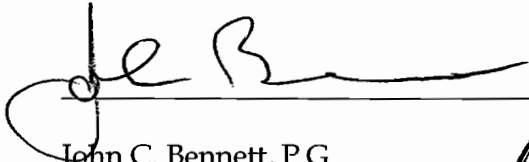
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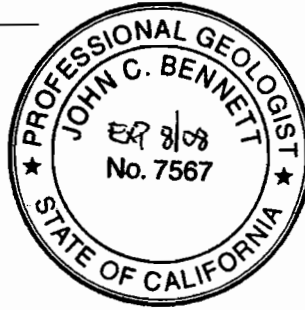
CDM
18581 Teller Avenue, Suite 200
Irvine, California 92612

Project No. 22517-51079-REPORT

The information contained in this report has received appropriate technical review and approval. The approach and methodology are based upon professional judgments founded upon review of available reports, the interpretation of such data and upon our professional experience and background. This acknowledgment is made in lieu of all warranties, either expressed or implied.

Prepared by:


John C. Bennett, P.G.
Project Manager



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Section 1

Introduction

This report presents the results of groundwater monitoring and sampling activities conducted at the Former Hewitt Landfill (site; Figure 1-1) during July 2006. Camp Dresser & McKee, Inc. (CDM) has prepared this report on behalf of the Vulcan Materials Company (Vulcan). This work was conducted in response to the letter from EPA dated February 2, 2006, which conveyed a request that Vulcan conduct additional groundwater monitoring at the site. This report summarizes the scope and results of the July 2006 quarterly sampling event, which was conducted in accordance to the Sampling and Analysis Plan and Quality Assurance Plan dated July 7, 2006.

The scope of work associated with this sampling event consisted of the following tasks:

- Redevelopment of facility wells 4899 and 4909F.
- Low-flow purging and sampling of two facility monitoring wells;
- Chemical analysis of groundwater samples for volatile organic compounds (VOCs), metals, general minerals and certain emerging compounds;
- Submission of quarterly report to the EPA summarizing the sampling event.

1.1 Property Background

The site is located in the North Hollywood portion of Los Angeles, California within an alluvial plain near the base of the San Gabriel Mountains in northern Los Angeles County (Figure 1-1).

1.2 Summary of Site Investigations

1.2.1 Previous Investigations and Regulatory Involvement

The site is located within a 4-square mile area designated by the EPA in 1986 as the North Hollywood Operable Unit (NHOU) of the San Fernando Superfund Area (EPA, 1989). Starting in 1979, VOCs, such as trichloroethene (TCE) and tetrachloroethene (PCE), were discovered in the alluvial groundwater aquifer within this area. Highest concentrations generally exist east (down-gradient) of the site (CH2M Hill, 2005). EPA implemented an interim remedial measure in 1989 for the NHOU consisting of groundwater extraction wells coupled to an air stripping treatment system that is located approximately 1 mile southeast of the site (Figure 1-1).

Law Environmental (1988, 1989) documented site groundwater conditions, sampling analytical results, and facility-well construction information for the site. These groundwater investigations were completed as a Solid Waste Assessment Test, which was required by the Los Angeles Regional Water Quality Control Board (RWQCB) for compliance with landfill-related regulations. Three facility wells are associated with

the site (Figure 1-2). Well 4899, is located west (up-gradient) of the site, and wells 4909C and 4909F are located along the eastern site boundary (down-gradient). According to present and historical groundwater data, groundwater flows generally west to east.

Table 1-1 Facility Well Construction Summary Former Hewitt Landfill, Los Angeles, California				
Well	Casing Diameter (in) /Material	Total Depth (feet)	Screened Interval (feet-bgs)	Date Constructed
4899	8/Steel	290	120-286	11/1/1984
4909C	6/Steel	500	230-240 290-300 390-400 480-490	Unknown
4909F	8/PVC	348	138-348	11/25/1984

Facility wells have been sampled on several occasions. Most recently, well 4909F was sampled on September 22, 1995. Results of laboratory analyses performed on this sample indicated concentrations of TCE and PCE of 24 and 22 µg/L, respectively (CH2M Hill, 1995). Sampling events in 1988 and 1989 entailed sampling of all three facility wells. Existing facility-well data indicate that detectable concentrations of nitrate, chloride, dissolved solids, PCE, and TCE exist down-gradient and up-gradient (Law Environmental, 1988, 1989).

CDM conducted a down-hole video survey on wells 4899 and 4909F on March 14, 2006, the purpose of which was to evaluate the current condition of the facility wells. Well 4909C is owned by the Los Angeles Department of Water and Power (LADWP), and contained a non-removable packer that prevented us from conducting a down-hole video survey. Based on results of the down-hole video survey, CDM concluded that wells 4899 and 4909F should be redeveloped prior to sampling due to presence of inert debris and sediments.

1.2.2 Nature and Extent of Contamination

The NHOU is an area known to contain groundwater contaminated with various VOCs such as TCE and PCE. Other contaminants of concern include chromium, nitrates, and chloride. Industrial activities including aircraft parts manufacturing and cleaning and metal plating were known to have taken place in the vicinity of the site.

Three facility wells were last sampled in February 1989. Results of analyses conducted on the samples from that and previous events indicated that nitrate, chloride, PCE, and TCE were detected in both up-gradient and down-gradient facility wells, suggesting an up-gradient source.

Section 2

Monitoring and Sampling Activities

2.1 Groundwater Monitoring and Sampling Methodology

Detailed descriptions of well redevelopment, groundwater monitoring, sampling, and analytical methods used for this program are provided in CDM's work plan dated July 7, 2006. Field sheets for well redevelopment are provided in Appendices A, and field sheets for groundwater sampling are provided in Appendix B.

2.2 Quality Assurance/Quality Control Procedures

Detailed descriptions of quality assurance and quality control procedures relative to groundwater monitoring, sampling, and analytical methods are provided in CDM's work plan dated July 7, 2006.

During this sampling event, CDM collected three quality assurance/quality control (QA/QC) field samples, including one field equipment blank, two field duplicate samples, and a matrix spike/matrix spike duplicate (MS/MSD) sample. Trip blank, method blank, matrix spike, blank spike, and surrogate spike samples were prepared and analyzed by the laboratory.

2.3 Analyses Performed

Groundwater samples were analyzed for one or more of the following constituents:

- VOCs, in accordance with USEPA Method 8260;
- Title 22 metals, in accordance with USEPA Method 6000 and 7000 series;
- Hexavalent chromium, in accordance with USEPA Method 7199;
- Nitrosodimethylamine (NDMA), in accordance with USEPA Method 1625;
- 1,2,3-Trichloropropane (1,2,3-TCP), in accordance with USEPA Method 504.1;
- Perchlorate, in accordance with USEPA Method 314.0;
- Nitrate and Nitrite (as Nitrogen), in accordance with USEPA Methods 353.3 and 354.1;
- Sulfide, in accordance with USEPA Method 376.2; and
- Various anions and cations, in accordance with USEPA Methods 300.0 and 6010B.

Laboratory analyses were performed by Calscience Environmental Laboratories (CEL) of Garden Grove, California. CEL is a California certified laboratory.

Chain-of-custody forms and copies of the laboratory reports containing all analytical results are included in Appendix C.

2.4 Work Plan Deviations

CDM attempted to carry out the above-referenced scope of work in accordance with the USEPA-approved scope of work detailed in the Sampling and Analysis Plan and Quality Assurance Plan dated July 7, 2006. However, CDM noted the following deviations from the work plan:

- During well redevelopment, water level measurements were not consistently recorded during recovery after development. Therefore, specific capacity of monitoring wells 4899 and 4909F could not be determined. Because this was not a project objective, no further action is warranted.
- The target detection limit of 0.02 mg/l for magnesium was not achieved by the project laboratory. However, detections of magnesium were significantly higher than the target reporting limit, or the reporting limit obtained by the laboratory, so this discrepancy becomes irrelevant.
- Two duplicate groundwater samples were analyzed by the laboratory due to a misunderstanding. CDM submitted extra sample volume to the laboratory, the intent of which was to provide sufficient volume to conduct MS/MSD analyses for quality assurance purposes. This occurrence does not affect the results or our interpretations of the data. In addition, CDM recommends that no duplicates be required in the next sampling event since an appropriate overall duplicate ratio will still be achieved, and laboratory precision can be evaluated using MS/MSD data.

Section 3

Results and Discussion

3.1 Discussion of Well Redevelopment

CDM's video survey of well 4899 indicated scaling within the screened interval and a piece of half-inch PVC debris. In addition, the video survey indicated that wells 4899 and 4909F have sediment accumulated at the bottom. Therefore, these wells were briefly redeveloped to facilitate collection of groundwater samples.

Well 4899 was wire-brushed briefly to remove scaling. Extensive wire brushing was not conducted to avoid damaging the casing, and no chemical treatments were used. CDM also removed a piece of half-inch PVC from well 4899 identified during the down-hole video survey.

Wells 4899 and 4909F were redeveloped by successive episodes of surging, bailing, and pumping. Purged development water was monitored periodically for temperature, specific conductance, and pH. Records of these measurements are included in Appendix A.

Approximately 6 vertical feet of soil were bailed from inside the casing of well 4899. The well was then wire brushed, and approximately 533 gallons were purged. Approximately 0.51 inches of drawdown occurred while pumping at approximately 5.5 gallons per minute (gpm).

Nearly 1.5 feet of soils were initially bailed from inside the casing of well 4909F. Then, approximately 605 gallons were purged. Approximately 0.09 inches of drawdown occurred while pumping at approximately 5.5 gpm.

Because Vulcan does not own well 4909C, and redevelopment would require removal of the existing pump and packer by LADWP, no redevelopment or sampling was conducted on this well.

3.2 Results of Groundwater Elevation Monitoring

Groundwater elevation data are presented in Table 1, including groundwater elevations from this sampling quarter as well as historical data collected during past monitoring periods by others. The historical period includes groundwater elevations dating back to April 1988.

3.3 Results of Groundwater Analyses

The results of the groundwater chemical analyses are listed in Tables 2 through 6, and are summarized in Sections 3.3.1 through 3.3.4. Laboratory data sheets are included in Appendix for each analyte, and sample results were compared to the Maximum Contaminant Levels (MCLs), Public Health Goals (PHGs), National Secondary Drinking Water Standard (NSDWS), and Drinking Water Notification Level (DWNL), where applicable, to assess the relative significance of observed concentrations.

3.3.1 Volatile Organic Compounds

The VOC analytical results are shown in Table 2. The following VOCs were detected:

- 1,1-Dichloroethane (1,1-DCA);
- 1,1-Dichloroethene (1,1-DCE);
- Cis-1,2-Dichloroethene (c-1,2-DCE);
- Chloroform;
- Dichlorodifluoromethane;
- PCE; and
- TCE.

For the current monitoring period, 1,1-DCA, PCE, and TCE were detected above their respective MCLs in well 4909F. The range of detected concentrations for each VOC and the number of wells in which the concentration exceeded the respective MCL for each compound is listed as follows:

- 1,1-DCA was detected in well 4909F at a concentration of 5.8 µg/l. However, the duplicate concentration was 4.3 µg/l, which is below the MCL of 5.0 µg/l for this compound.
- PCE was detected in well 4909F at a concentration of 23 µg/l, relative to its MCL of 5.0 µg/l. The duplicate sample concentration was 15 µg/l.
- TCE was detected in well 4909F at a concentration of 74 µg/l, relative to its MCL of 5.0 µg/l. The duplicate sample concentration was 40 µg/l.

3.3.2 Dissolved Metals

The results of the dissolved metals analyses are presented on Table 4. Nickel was detected above laboratory reporting limits at both wells at concentrations ranging from 0.00344 mg/l (4909F-duplicate) to 0.00523 mg/l (4899). Zinc was detected above laboratory reporting limits at both wells at concentrations ranging from 0.0200 mg/l (4909F-duplicate) to 0.0480 mg/l (4899). No metals were detected above their respective MCLs.

Chromium was detected in the equipment blank sample at a concentration of 0.00166 mg/l. The equipment blank was obtained by running laboratory-grade distilled water through the body of the bladder pump used to purge well 4899. The chromium detection in the equipment blank may have resulted from the stainless-steel used in the bladder pump body assembly.

3.2.3 General Minerals

The results of the minerals analyses are presented on Table 5. The following analytes were reported:

- Total Alkalinity, as calcium carbonate (CaCO_3);
- Bicarbonate Alkalinity, as calcium carbonate (CaCO_3);
- Hydroxide Alkalinity, as calcium carbonate (CaCO_3);
- Total Hardness;
- Total Dissolved Solids (TDS);
- Total Organic Carbon (TOC);
- Assorted cations, such as Calcium, Iron, Manganese, Magnesium, Potassium Silicon (derived from silica concentration), Sodium;
- Assorted anions, such as Fluoride and Chloride;
- Nitrate and Nitrite (as N);
- Sulfate; and
- Total Sulfide.

For the current monitoring period, manganese and nitrate were detected above their respective MCLs in well 4899. The range of detected concentrations for each mineral and the number of wells in which the concentration exceeded the respective MCL for each mineral is listed as follows:

- Manganese was detected in well 4899 at a concentration of 0.167 mg/l, relative to its MCL of 0.05 mg/l. The duplicate concentration was 0.170 mg/l.
- Nitrate, as N, was detected in well 4899 at a concentration of 19 mg/l, relative to its MCL of 10 mg/l. The duplicate concentration for well 4899 was also 19 mg/L. Nitrate was also detected in well 4909F, and in the duplicate sample, at a concentration of 12 mg/l.

3.3.4 Emerging Compounds

Groundwater samples from the Site were analyzed for the following five emerging compounds: 1,2,3-Trichloropropane (1,2,3-TCP), hexavalent chromium, N-Nitrosodimethylamine (NDMA), 1,4-Dioxane, and perchlorate. The emerging compounds analytical results are shown in Table 5.

During the current monitoring period, hexavalent chromium was the only emerging compound detected at or above the laboratory reporting limit. Hexavalent chromium was detected in well 4909F at a concentration of 1.3 µg/l and the duplicate sample concentration was 1.4 µg/l.

3.3.4 Field Parameters

During well sampling, turbidity, temperature, pH, and EC were measured at the beginning of purging for each monitoring well, after each purge volume was removed, and immediately before sample collection. Results of the measurements conducted immediately prior to sample collection are summarized on Table 6, and field sheets are included in Appendix B.

3.4 Laboratory Data Evaluation

Analytical data collected during the June 2006 quarterly groundwater sampling event at the former Hewitt Landfill were reviewed and evaluated to ensure that they were usable and met the project objectives. EPA's Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review ("Functional Guidelines", EPA, 1999 and 2004) were used in conjunction with analytical method requirements to assess overall analytical data quality. Specifically, EPA's Functional Guidelines were used to assist in the overall technical review process and rationale; whereas, criteria specified in the project SAP were used to assess accuracy and precision and to determine when data qualification was warranted.

Laboratory data were reviewed for inclusion and frequency of the necessary QC supporting information. Supporting QC documentation that was evaluated for each analytical report included the following major items:

- sample holding times
- method blanks
- MS/MSD recoveries
- relative percent difference (RPD) between MS and MSD
- laboratory control sample (LCS) recoveries
- surrogate spike recoveries

The review included data generated by Calscience Environmental Laboratories (CEL), located in Garden Grove, California. CEL is certified by California's Environmental Laboratory Accreditation Program (ELAP Certification number 1230). All samples were analyzed for VOCs using EPA Method 8260B, NDMA and 1,4-dioxane using EPA Method 8270C(M), 1,2,3-TCP using EPA Method 524.2(M), perchlorate by EPA Method 314, hexavalent chromium by EPA Method 7199, metals (EPA Methods 6020 and 7470A), TOC by EPA Method 415.1, alkalinity by Standard Methods 2320B,

hardness by EPA Method 130, TDS by EPA Method 160.1, nitrite by EPA Method 300, fluoride by EPA Method 340.2 and total sulfides using EPA Method 376.2. Findings from the data evaluation are discussed in the following sections.

Holding Times

For water samples, the maximum method holding times for the target analyzed vary from 24 hours (hexavalent chromium) to 6 months (metals) and are specified in Table 3-1 of the SAP. Extraction and analysis dates for each analyte in each sample were compared against these holding times. Based on the comparison, it was determined that all water samples collected during the first monitoring event were analyzed within the specified technical holding times.

Method Blanks.

Method blanks were analyzed along with all samples at a frequency of one blank per analytical batch. An analytical batch is defined as a maximum of 20 samples of similar matrix from one project that are analyzed together. The method blank is processed through all procedures, materials, reagents and labware used for sample preparation and analysis.

No concentrations of any target analytes were detected in any of the method blanks at concentrations greater than their respective laboratory reporting limits.

Laboratory Control Samples

Laboratory control samples (LCS), also referred to as blank spikes, are prepared by spiking a known amount of the pure analyte into a method blank, which is then carried along with the samples through the entire sample preparation/analysis sequence. LCS results provide information on the accuracy of the analytical method and on the laboratory's performance.

All LCS recoveries were within acceptable control limits (specified in SAP) for all analyses performed except for one analyte in one sample, which indicates acceptable accuracy for a clean water matrix. Vinyl chloride was recovered in one LCS analyzed on July 26, 2006 at 77 percent, which is below the lower acceptance limit of 85 percent. Only one sample (the duplicate sample collected from 4909F) was analyzed in this batch. This vinyl chloride result was qualified with a "J" to indicate an estimated result. All other LCS recoveries were within acceptable limits.

Matrix Spike and Matrix Spike Duplicate Samples

Sample matrix spikes are prepared by adding a known amount of the pure analyte to the sample before extraction. Matrix spike duplicate samples are prepared from a second aliquot of the sample analyzed as the matrix spike. MS and MSD results are used to assess background and interferences that may have an effect on the sample analyte, and the (RPD) is used to assess precision between samples of similar type. MS/MSD samples were analyzed at a frequency of 1 per 20 samples, or one per analytical batch of similar matrix, for all analyses.

Based on a review of the laboratory QC summary sheets, all MS and MSD samples were analyzed at the method-specified frequency of 1 per 20 samples. All MS/MSD recoveries and the difference between the two were within the control limits specified in the SAP except for one analyte in one MS/MSD pair, which indicates acceptable accuracy and precision. NDMA was recovered in the MS sample analyzed on July 28, 2006 at 55 percent, which is within the acceptance limits of 50 to 130 percent. The MSD, however, was recovered at 40 percent, which is below the acceptance limit. Because the MS recovery was within control limits and because the MSD was just slightly below the acceptance limit, qualification was not deemed necessary. Therefore, no further action was warranted.

Surrogate Spike Samples

Laboratory performance on individual samples is evaluated by means of spiking. All samples analyzed for organics are spiked with surrogates just prior to sample purging (or sample extraction). Percent recoveries for all surrogates were provided with each analytical report, as well as the acceptable control limits (established by the laboratory).

All percent recoveries for all surrogates spiked into project samples and laboratory QC samples were within the required ranges, which demonstrate acceptable performance on an individual sample basis.

Overall Assessment of Groundwater Data

Based on the review of the groundwater data, there were no laboratory QC deficiencies reported during the laboratory analyses that were significant enough to warrant data rejection. However, due to a slightly low LCS recovery of vinyl chloride, one sample result was qualified with a "J" to indicate an estimated result. All other groundwater data collected during the 2006 sampling event were determined to be usable without data qualification.

Section 4

Summary of Findings and Recommendations

4.1 Summary of Findings

Data collected during this monitoring event conducted at the site in July 2006 indicates that TCE, PCE, 1,1-DCA, manganese, and nitrate are present in groundwater within facility wells at concentrations greater than their respective MCLs. Results these analyses from this sampling event are generally similar to previous sampling events conducted in 1988, 1989, and 1995, as specified below.

PCE

Samples from well 4899 have historically contained between <1 and 200 µg/L PCE, relative to the currently detected 4.1 µg/L. Samples collected from well 4909F have historically contained between <1 and 22 µg/L relative to the current 23 µg/L.

TCE

Samples from well 4899 have historically contained between <1 and 45 µg/L TCE, relative to <1 µg/L currently. Samples collected from well 4909F have historically contained between <1 and 24 µg/L relative to the current 74 µg/L in the primary sample and 40 µg/L in the duplicate.

1,1-DCA

Samples from well 4899 have historically contained between <1 and 46 µg/L 1,1-DCA, relative to the current concentration that is below its reporting limit of 1 µg/L. Samples collected from well 4909F have historically contained less than its reporting limit of 1 µg/L, relative to the current 5.8 µg/L.

Nitrate

Samples from well 4899 have historically contained between 0.6 and 30 mg/L nitrate, relative to the currently detected 19 mg/L. Samples collected from well 4909F have historically contained between 35 and 73 mg/L, relative to the current 12 mg/L.

Manganese

Samples from well 4899 have historically contained between < 0.005 and 0.05 mg/L manganese, relative to the currently detected 0.167 mg/L. Samples collected from well 4909F have historically contained between < 0.005 and 0.05 mg/L, relative to the current concentration of less than the reporting limit of 0.005 mg/L.

4.2 Recommendations

Three additional sampling events are planned for October 2006, January 2007, and April 2007. Based on groundwater data from previous and the current sampling events, and because their concentrations are below reporting limits, CDM recommends that the following analyses be eliminated from future sampling events:

- 1,4 Dioxane;
- Minerals (although nitrate and nitrite analyses should continue);
- 1,2,3-Trichloropropane;
- N-nitrosodimethylene; and
- Perchlorate.

Section 5

References

CH2M Hill, 1995, Groundwater Monitor Well Sampling and Soil Gas Sampling at Selected Landfills in the North Hollywood Area, San Fernando Groundwater Monitoring Program.

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Law Environmental, 1989, Solid Waste Assessment Test Supplementary Monitoring Report, Hewitt Landfill (Closed), North Hollywood District, Los Angeles, California

Section 6

Figures



Aerial Photo Source: <http://casil-mirror1.ceres.ca.gov/casil/usgs.gov/doqq/34118/034118b4ne.tif>, October 7, 2002.



Legend

 Hewitt Landfill Boundary

Hewitt Landfill (Closed)
7361 Laurel Canyon Boulevard
Los Angeles, CA 91605



0 500 1,000 2,000
Feet

Vulcan Materials Company
Hewitt Landfill (Closed)
Site Vicinity Map

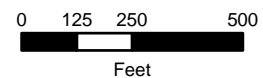
Figure 1-1



Legend

- Hewitt Landfill Boundary
- + Monitoring Well

Hewitt Landfill (Closed)
7361 Laurel Canyon Boulevard
Los Angeles, CA 91605



Vulcan Materials Company
Hewitt Landfill (Closed)
Site Vicinity Map

Figure 1-2

Section 7

Tables

Table 1
Vulcan, Former Hewitt Landfill
Past and Present Groundwater Levels

Well ID	Date of Measurement	Measured by	Total Depth of Well (ft-msl)	Depth to Water (ft-bgs)	Groundwater Elevation (ft-msl)
4899	4/4/1988	Law Environmental	290	246.80	522.20
4899	9/15/1995?	CH2MHill	290	287.00	482.00
4899	7/20/2006	CDM	291.72	271.89	497.11
4909C	4/26/1988	Law Environmental	500	248.08	501.92
4909C	9/15/1995?	CH2MHill	500	264.00	486.00
4909F	4/4/1988	Law Environmental	348	247.88	517.12
4909F	09/15/1995?	CH2MHill	348	245.00	520.00
4909F	7/21/2006	CDM	340.38	266.18	498.82

Notes:

ft-msl = feet mean sea level

ft-bgs = feet below ground surface

Table 2
Vulcan, Former Hewitt Landfill
Groundwater Sampling Results
Volatile Organic Compounds (ug/L)

	Type	Units	1,1-Dichloroethane	1,1-Dichloroethene	c-1,2-Dichloroethene	Chloroform	Dichlorodifluoromethane	Tetrachloroethene	Trichloroethene
	MCL	µg/l	5.0	6.0	6.0	NE	NE	5.0	5.0
Well ID	PHG	µg/l	3.0	10	100	NE	NE	0.06	0.8
4899		µg/l	1 U	1 U	1 U	1 U	1 U	4.1	1 U
4899	EB	µg/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4899	K	µg/l	1 U	1 U	1 U	1 U	1 U	3.8	1 U
4909F		µg/l	5.8	2.7	4.1	2.0	1.4	23	74
4909F	K	µg/l	4.3	1 U	2.9	1.5	1 U	15	40

Notes:

Only analytes detected in one or more samples are listed

All samples analyzed using EPA Method 8260B

MCL = Maximum Contaminant Level, as required by California Department of Health Services

PHG = Public Health Goal, as required by California Office of Environmental Health Hazard Assessment

NE = None Established, as of the date of this report.

µg/l = micrograms per liter

U = Not detected at a concentration greater than the laboratory reporting limit shown

EB = Equipment blank

K = Duplicate sample

Table 3
Vulcan, Former Hewitt Landfill
Groundwater Sampling Results
Dissolved Metals (mg/L)

	Sample	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
	Type													
	MCL	0.006	0.05	0.004	0.005	0.005	1.3	0.015	0.002	0.10	0.05	0.10	0.002	5.0
	PHG	0.02	0.000004	0.001	0.00007	NE	0.17	0.002	0.0012	0.012	NE	NE	0.0001	NE
Well ID	NSDWS	NE	0.01	NE	NE	NE	1.0	NE	NE	NE	NE	0.10	NE	5.0
4899		0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.00523	0.001 U	0.001 U	0.001 U	0.0480
4899	EB	0.001 U	0.001 U	0.001 U	0.001 U	0.00166	0.001 U	0.001 U	0.0005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0121
4899	K	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.00453	0.001 U	0.001 U	0.001 U	0.0340
4909F		0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.00368	0.001 U	0.001 U	0.001 U	0.0336
4909F	K	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.00334	0.001 U	0.001 U	0.001 U	0.0200

Notes:

All parameters analyzed using EPA Method 6020 except mercury, which was analyzed using EPA method 7470A

MCL = Maximum Contaminant Level, as required by California Department of Health Services

PHG = Public Health Goal, as required by California Office of Environmental Health Hazard Assessment

NSDWS = National Secondary Drinking Water Standards

NE = None Established, as of the date of this report

All analytical results in milligrams per liter (mg/l)

U = Not detected at a concentration greater than the laboratory reporting limit shown

EB = Equipment blank

K = Duplicate sample

Table 4
Vulcan, Former Hewitt Landfill
Groundwater Sampling Results
General Minerals (mg/L)

Sample Type	Alkalinity, Total (as CaCO ₃)	Bicarbonate Alkalinity (as CaCO ₃)	Hydroxide Alkalinity (as CaCO ₃)	Carbonate Alkalinity (as CaCO ₃)	Hardness, Total	Solids, Total Dissolved	Carbon, Total Organic	Calcium	Iron	Magnesium	Manganese	Potassium	Silicon (from Silica)	Sodium	Chloride	Fluoride	Nitrate (as N)	Nitrite (as N)	Sulfate	Sulfide, Total
MCL	NE	NE	NE	NE	NE	1500	NE	NE	0.30	NE	0.05	NE	NE	NE	600	2.0	10	1.0	600	NE
PHG	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	1.0	NE	1.0	NE	NE
Well ID NSDWS	NE	NE	NE	NE	NE	500	NE	NE	0.30	NE	0.05	NE	NE	NE	250	2.0	NE	NE	250	NE
EPA Method	SM2320B				130.0	160.1	415.1	6010B							300					376.2
4899	290	290	290	1 U	480	597	1.6	140	0.1 U	25.0	0.167	5.45	9.38	45.5	66	0.26	19	0.1 U	42	0.05 U
4899 EB	1.7	1.7	1.7	1 U	2 U	1 U	0.5 U	0.1 U	0.1 U	0.1 U	0.005 U	0.5 U	0.107 U	0.599	1 U	0.1 U	0.1 U	0.1 U	1.4	0.05 U
4899 K	290	290	290	1 U	430	623	1.7	139	0.1 U	25.7	0.170	5.31	9.61	44.6	64	0.25	19	0.1 U	42	0.05 U
4909F	300	300	300	1 U	400	543	1.6	124	0.1 U	24.8	0.005 U	5.68	12.6	42.0	35	0.26	12	0.1 U	59	0.05 U
4909F K	300	300	300	1 U	400	535	1.5	119	0.1 U	23.4	0.005 U	6.00	12.2	40.2	33	0.26	12	0.1 U	57	0.05 U

Notes:

CaCO₃ = Calcium carbonate

MCL = Maximum Contaminant Level, as required by California Department of Health Services

PHG = Public Health Goal, as required by California Office of Environmental Health Hazard Assessment

NSDWS = National Secondary Drinking Water Standards

NE = None Established, as of the date of this report

All analytical results in milligrams per liter (mg/l)

U = Not detected at a concentration greater than the laboratory reporting limit shown

EB = Equipment blank

K = Duplicate sample

Table 5
Vulcan, Former Hewitt Landfill
Groundwater Sampling Results
Emerging Compounds

Well ID	Sample Type	1,2,3-Trichloropropane (1,2,3-TCP)	Chromium, Hexavalent	N-Nitrosodimethylamine (NDMA)	1,4-Dioxane	Perchlorate
	MCL	0.005	NE	NE	NE	NE
Well ID	PHG	NE	NE	NE	NE	6.0
	DWNL	NE	NE	10	3.0	6.0
EPA Method		524.2M (ng/l)	7199 (µg/l)	8270C M (ng/l)	314.0 (µg/l)	
4899		0.005 U	0.13 J	2 U	2 U	2 U
4899	EB	0.005 U	0.11 J	2 U	2 U	2 U
4899	K	0.005 U	0.12 J	2 U	2 U	2 U
4909F		0.005 U	1.3	2 U	2 U	2 U
4909F	K	0.005 U	1.4	2 U	2 U	2 U

Notes:

MCL = Maximum Contaminant Level, as required by California Department of Health Services

PHG = Public Health Goal, as required by California Office of Environmental Health Hazard Assessment

DWNL = Drinking Water Notification Level, as required by California Department of Health Services

NE = None Established, as of the date of this report

ng/l = nanograms per liter

µg/l = micrograms per liter

U = Not detected at a concentration greater than the laboratory reporting limit shown

EB = Equipment blank

K = Duplicate sample

J = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is an estimate.

Table 6
Vulcan, Former Hewitt Landfill
Groundwater Sampling Results
Field Parameters

Well ID	pH	Specific Conductance	Turbidity	Dissolved Oxygen	Redox	Temperature
	S.U.	umohs/cm	NTU	mg/L	mV	degrees C
4899	7.36	1	70	2.31	75	22.2
4909F	6.92	0.961	11	9.18	280	21.7

Notes:

Results presented represent conditions measured immediately prior to sample collection

mg/L = milligrams per liter

SU = Standard pH Units

umohs/cm = micromohs per centimeter

mV = millivolts

Appendix A

July 2006 Sampling Event

Well Redevelopment Records

Well No.: MW-4909F		Site/Location: Vulcan-Hewitt; 7301 Laurel Canyon Blvd.							
Client: Vulcan		Contractor: WDC					Page 1 of 1		
Date Started: 18 July 06 Tues			Time Started: 1000			Development Rig: (Y) N			
Date Ended: 18 July 06			Time Ended: 1645			Casing Diameter: 8"			
Equipment: Pullstar 12000			Pre-devel. Static Water Level (feet BTOC): 365.83						
Development Method: bail, surge, bail, pump			Average discharge rate (gpm): 5.5						
Maximum Drawdown During Pumping: _____ feet at 5.5 gpm			Total Quantity Bailed (gallons): 105 (2 separate occasions)						
			Total Quantity Pumped (gallons): 605						
			Developed By: N. Begay (CDM) + Neil D. (WDC)						
Total Depth of Well (feet): 340.38 2" - 0.16									
Depth to Water (feet): 265.83 (X) 4" - 0.65 = <u>104 (ft)</u> One (1) Casing Volume									
Water Column Height (feet): 74.55 6" - 1.47 > 109.6 8" - Sch. 80 PVC.									
Time	Gallons	Temp. (°C/°F)	pH	Conductivity (µmhos/cm) mS	Turbidity (NTUs)	Water Level (ft. BTOC)	(mg/L) DO	Remarks (salinity)	NOTES
1450	27.5	23.5	6.82 8.43	0.892	43	-	11.02	0.03 0.04	turb. not stable
1500	82.5	20.7	7.85	0.823	-10	265.93	10.99	0.03	
1510	137.5	19.8	7.99	0.830	-10	265.89	10.01	0.03	
1520	192.5	20.8	7.84	0.822	-10	-	11.15	0.03	Pump off add 40'
1540	247.5	20.8	8.08	0.806	1-7	265.84 256.84	10.14	0.03	Pump off for 10 min Didn't stabilize
1550	302.5	20.5	7.67	0.816	12-18	265.85	9.30	0.03	Turb. not stable
1600	357.5	20.0	8.39	0.830	5-16	265.84	8.45	0.03	
1610	412.5	20.1	8.44	0.829	17-20	265.83	7.85	0.03	-10 NTU trace fine sand
1620	467.5	19.7	8.58	0.829	1-4	265.83	10.22	0.03	-10 NTU other w/o
1630	522.5	19.9	8.62	0.827	7-10	265.85	8.50	0.03	-10 DO didn't stab.
1640	577.5	19.6	8.56	0.829	-10	265.83	9.16	0.03	clear, trace sand, f -10 NTU
1645	605.0	19.2	8.62	0.826	-10	265.84	8.78	0.03	-10 NTU
STOP PUMPING									

CDM

WELL DEVELOPMENT LOG

Appendix B

July 2006 Sampling Event

Purge Characterization and Sample Logs

Well No.: 4899		Site: Former Hewitt Landfill		Date: 7/20/06					
Client: Vulcan		Project Number: 22517-51079							
Well Casing Diameter (inches): 8"		Well Casing Material: (PVC) SS Other:							
Well Headspace:		PID (ppm): N/A 0.0 ppm		FID (ppm): N/A					
Samplers: H. YOUNG		with CDM							
Total Depth of Well (feet):		291.72' b70C2" - 0.16							
Depth to Water (feet):		271.89' (X) 4" - 0.65 Gal/ft. = <u>N/A</u> (X) 3 = <u>N/A</u>							
Water Column Height (feet):		6" - 1.47							
Well Reference Point: TOC		NORTH EDGE 863"		Low Flow Purge					
PURGE METHOD: Submersible pump <input type="checkbox"/> Bladder pump <input checked="" type="checkbox"/> Disposable bailer <input type="checkbox"/>									
Pump Make/Model:		Depth of pump intake (feet): 280' b70C							
Purge equipment decontaminated? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		Container type: Baker tank or 55 gallon drum							
Purge/decon water containerized? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		Volume:							
Initial DO: 3.44 mg/L		Start Time: 11:15		Flow Rate: 500ml/min					
Time	Gallons LITERS	Temp. (°C/°F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	DTW (ft TOC)	Comments
11:15	0								BEGIN MICROPURGING
11:20	1.52.5	23.0	7.21	1.04	212	3.44	179	271.88	CLOUDY
11:25	3.05	22.3	7.32	1.00	202	2.53	102		
11:35	10	22.0	7.31	1.00	152	2.30	33	271.90	CLOUDY
11:45	15	21.6	7.31	1.00	136	2.38	18	271.90	CLOUDY
11:55	20	21.6	7.33	1.00	155	2.41	25	271.89	
12:05	25	21.9	7.36	1.00	157	2.67	37	271.90	
12:20	32.5	22.1	7.35	1.00	80	3.21	61	271.90	
12:40	42.5	21.8	7.36	1.01	87	2.36	95	271.89	
13:00	52.5	22.2	7.36	1.00	80	2.45	81	271.89	CLOUDY
Sample Analyses:			Method		Container Type/Volume		Preservative		
			EPA 8260 VOCs						
			EPA 8270 SIM SVOCs						
			EPA 504.1 1,2,3-TCP						
			EPA 6010/7471 Title 22 Metals						
			EPA 7196 Hexavalent Chromium						
			EPA 1625 NDMA						
Sample Collection Method:			EPA 314.0 Perchlorate						
			EPA 353.3/354.1 Nitrate/Nitrate						
			EPA 300.0/6010B Anions and Cations						
			EPA 376.2 Sulfide						
			EPA 6010 Dissolved Fe and Mn						
Pump: <input checked="" type="checkbox"/>	Flow Rate: <100ml/min		Sample ID: 4899-280-072006-0			Sample Time: 13:30			
Bailer: <input type="checkbox"/>	Type: disposable		Duplicate ID: MS/MSD: 4899-280-072006-0			Sample Time: 13:30			
Other: <input type="checkbox"/>	Desc.:		Equip. blank ID: 4899-280-072006-2			Sample Time: 14:30			

CDM

MONITORING WELL PURGE AND SAMPLING FORM

Well No.: 4899		Site: Former Hewitt Landfill		Date: 7/20/06					
Client: Vulcan		Project Number: 22517-51079							
Well Casing Diameter (inches): 8"		Well Casing Material: (PVC) SS Other:							
Well Headspace: 0.0 PID (ppm): N/A		FID (ppm): N/A							
Samplers: H. YOUNG		with CDM							
Total Depth of Well (feet): 291.72		b702 - 0.16							
Depth to Water (feet): 271.89		(X) 4" - 0.65 Gal/ft. = NA (X) 3 = ~ A							
Water Column Height (feet): 6"		1.47 Low Flow Purge							
Well Reference Point: TOC		8"							
PURGE METHOD: Submersible pump <input type="checkbox"/> Bladder pump <input checked="" type="checkbox"/> Disposable bailer <input type="checkbox"/>									
Pump Make/Model: GED		Depth of pump intake (feet): 280' b70C							
Purge equipment decontaminated? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		Container type: Baker tank or 55 gallon drum							
Purge/decon water containerized? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		Volume:							
Initial DO 3.44 mg/L		Start Time: 11:15		Flow Rate: 500mL/MIN					
Time	Gallons	Temp. (°C/°F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	DTW (ft TOC)	Comments
13:20	62.5	22.2	7.36	1.00	70	2.31	75	271.90	SLIGHTLY CO
13:30	67.5	COLLECT GROUNDWATER			SAMPLE AND		MS/MSD.		
Sample Analyses:									
Method				Container Type/Volume			Preservative		
EPA 8260 VOCs									
EPA 8270 SIM SVOCs									
EPA 504.1 1,2,3-TCP									
EPA 6010/7471 Title 22 Metals									
EPA 7196 Hexavalent Chromium									
EPA 1625 NDMA									
EPA 314.0 Perchlorate									
EPA 353.3/354.1 Nitrate/Nitrate									
EPA 300.0/6010B Anions and Cations									
EPA 376.2 Sulfide									
EPA 6010 Dissolved Fe and Mn									
Sample Collection Method:									
Pump: <input checked="" type="checkbox"/> Flow Rate: <100ml/min		Sample ID: 4899-280-072006-0			Sample Time: 13:30				
Bailer: <input type="checkbox"/> Type: disposable		Duplicate ID: 4899-280-072006-Q			Sample Time: 13:30				
Other: <input type="checkbox"/> Desc.:		Equip. blank ID: 4899-280-072006-2			Sample Time: 14:30				

Well No.: 4909F		Site: Former Hewitt Landfill		Date: 7/21/06	
Client: Vulcan			Project Number: 22517-51079		
Well Casing Diameter (inches):			Well Casing Material: (PVC) SS Other:		
Well Headspace: 0.0 PID (ppm): N/A			FID (ppm): N/A		
Samplers: H. YOUNG with CDM					
Total Depth of Well (feet): 340.38' ^{b786} - 0.16					
Depth to Water (feet): 266.18' (X) 4" - 0.65 Gal/ft. = NA (X) 3 = NA					
Water Column Height (feet): 6" - 1.47					
Well Reference Point: TOC TOP OF 7.5" - NA Low Flow Purge					
PURGE METHOD: Submersible pump <input type="checkbox"/> Bladder pump <input checked="" type="checkbox"/> Disposable bailer <input type="checkbox"/>					
Pump Make/Model: QED MP			Depth of pump intake (feet): 285' ^{b786} TOC (TOP OF 2" PIPE)		
Purge equipment decontaminated? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>			Container type: Baker tank or 55 gallon drum		
Purge/decon water containerized? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>			Volume:		
Initial DO: 8.73		Start Time: 10:55		Flow Rate: 500ML/MIN	

Time	Gallons LITERS	Temp. (°C/°F)	pH	Conductivity (µmhos/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	DTW (ft TOC)	Comments
10:55	0								BEGIN MICRO PURGE AT
11:00	2.5	26.0	7.14	0.955	61	8.73	224	266.20	500 ML/MIN SLIGHTLY CLOUDY
11:05	5	23.6	7.14	0.958	43	9.21	230	266.20	SLIGHTLY CLOUDY
11:10	7.5	22.0	7.11	0.956	25	9.73	261	266.20	SLIGHTLY CLOUDY
11:15	10	21.8	7.05	0.958	13	9.33	278	NM	SLIGHTLY CLOUDY
11:20	12.5	21.6	7.01	0.959	12	9.04	281	266.19'	CLEAR
11:25	15	21.6	6.97	0.961	14	9.95	274	NM	CLEAR
11:30	17.5	21.6	6.94	0.962	10	9.51	278	266.20	CLEAR
11:35	20	21.7	6.92	0.961	11	9.18	280	266.20	
11:40	COLLECT		GW		SAMPLE.				

Sample Analyses:	Method	Container Type/Volume	Preservative
	EPA 8260 VOCs		
	EPA 8270 SIM SVOCs		
	EPA 504.1 1,2,3-TCP		
	EPA 6010/7471 Title 22 Metals		
	EPA 7196 Hexavalent Chromium		
	EPA 1625 NDMA		
	EPA 314.0 Perchlorate		
Sample Collection Method:	EPA 353.3/354.1 Nitrate/Nitrate		
	EPA 300.0/6010B Anions and Cations		
	EPA 376.2 Sulfide		
	EPA 6010 Dissolved Fe and Mn		

Pump: <input checked="" type="checkbox"/> Flow Rate: <100ml/min	Sample ID: 4909F-285-072106-0	Sample Time: 11:40 11:50
Bailer: <input type="checkbox"/> Type: disposable	Duplicate ID: 4909F-285-072106-1	Sample Time: 11:50 11:40
Other: <input type="checkbox"/> Desc.:	Equip. blank ID:	Sample Time:

MONITORING WELL PURGE AND SAMPLING FORM

Appendix C

July 2006 Sampling Event

Laboratory Reports and Chain-of-Custody Records